SKETCH OF A PROSPECTUS

OF THE

ROYAL INSTITUTION

OF

GREAT BRITAIN,

INCORPORATED BY CHARTER

M,DCC,XCIX.

> "Eſt illa Platonis vera Vox, omnem Doctrinam harum ingenuarum et humanarum Artium
> " uno quodam SOCIETATIS Vinculo contineri. Ubi enim perſpecta Vis eſt Rationis ejus, quâ
> " Cauſæ Rerum atque exitus cognoſcuntur, mirus quidam omnium Conſenſus Doctrinarum
> " Concentuſque reperitur."——CICERO. De orat: III. 6.

eſtabliſhing new channels of induſtry. Succeſsful exertions give courage to the ſpirit of invention; the ſciences flouriſh; and as the moral and phyſical powers of man increaſe, new methods of improvement become practicable, which in an earlier ſtate of ſociety would have appeared viſionary ~~and abſurd~~ altogether.

Who among the Ancients would have liſtened to the ~~ſtrange~~ extraordinary ſcheme of writing books with ſuch rapidity that one man by this new art ſhould perform the work of twenty thouſand amanuenſes? What philoſopher would have given credit to the daring project of navigating the wideſt oceans? or ~~admitted~~ imagined the aſtoniſhing effects of gunpowder? or even ſuſpected the uſeful and extended powers of the ſteam engine? — ~~projects~~ discoveries which have changed the courſe of human affairs, and of which the future effects can ſcarcely yet be conjectured! The men of thoſe early ages, in the confidence of their own wiſdom, might have derided them as impoſſible, or rejected them as unneceſſary. But to thoſe who enjoy the full effect of theſe and numerous other inſtances of ſucceſsful invention, it ſurely becomes a duty to reaſon upon different principles, and to exert ~~every~~ all means in their power to give effect to the progreſs of improvement. To point out the cauſes which impede this progreſs, and to invite the public to join in effectually removing them, is the purpoſe of the preſent addreſs.

THE ſlowneſs with which improvements of every kind make their way into common uſe, and eſpecially ſuch improvements as are moſt calculated to be of general utility, is very remarkable; and forms a ſtriking contraſt to the extreme avidity with which thoſe unmeaning changes are adopted, which folly and caprice are continually bringing forth and ſending into the world under the auſpices of faſhion. On the firſt view of the ſubject it appears very extraordinary that any perſon ſhould neglect or refuſe to avail himſelf of ~~an~~ invention or contrivance ~~within his power to obtain~~, which is evidently calculated to facilitate his labour, and increaſe his comforts. But when we reflect on the power of habit, and conſider how difficult it is for a perſon even to perceive the imperfections of inſtruments to which he has been accuſtomed from his early youth, our ſurpriſe ~~that improvements do not make a more rapid progreſs~~ will be very much diminiſhed.

a proposed

~~There are~~ Many other circumſtances which are unfavourable to the introduction of improvements. The very propoſal of any thing new carries with it ſomething offenſive;—ſomething that ſeems to imply ſuperiority; and even that kind of ſuperiority preciſely, to which mankind are leaſt diſpoſed to ſubmit. There are few who do not feel aſhamed and mortified at being obliged to learn any thing new, after they have for a long time been conſidered, and been accuſtomed to conſider themſelves, as proficients in the buſineſs in which they are engaged~~; and~~. Their awkwardneſs in their new apprenticeſhip, more eſpecially when they are obliged to work with tools with which they are not acquainted, tends much to increaſe their diſlike to the~~ir~~ teacher, and his doctrines.

To theſe obſtacles to the introduction of new improvements, we may add the innumerable miſtakes, voluntary and involuntary, committed by workmen who are employed in any buſineſs which is new to them, and which perhaps they neither underſtand nor approve; and, what is ſtill more to be feared, thoſe alterations which workmen in general, and more eſpecially thoſe who pride themſelves on their ingenuity, have an irreſiſtible propenſity to make when they are employed in executing any thing that is new. How many uſeful inventions have been brought into diſrepute by ~~what has been pompouſly announced to the public as improvements of them! And the inſtances can ſcarcely be enumerated, in which both manufacturers, and the world at large, have been diſguſted at pretended inventions of no value whatever~~.

alterations intended & announced as improvements! It must be allowed also, that some cause for suspicion naturally arises, to manufacturers, and the world at large, from frequent instances of pretended inventions, destitute of all real value.

They who propoſe improvements are commonly ſuſpected of being influenced by intereſted motives; and this ſuſpicion, which is often but too well founded, occaſions little attention to be paid to ſuch propoſals by the public.

Not only ſuſpicion, but jealouſy and envy have too often their ſhare in obſtructing the progreſs of improvement, and in preventing the adoption of plans calculated to promote the public good.

The moſt meritorious exertions in ~~promoting~~ the public proſperity are often viewed with ſuſpicion; and the fair fame that is derived from thoſe exertions, with jealouſy and envy: and many, who have too much diſcernment not to perceive the merit of an undertaking evidently uſeful, and too much regard for their reputation not to appear to approve of it, are ~~often~~ very far from wiſhing it ſucceſs.

favour of

yet

This melancholy truth is but too well known, and ~~does more to deter~~ ſenſible and well-diſpoſed perſons from ~~coming forward into~~ the public ~~view, with~~ plans for uſeful improvements, than all the trouble and difficulty that would attend the execution of them.

has more effect in deterring

offering to

their

THESE are the chief cauſes which prevent the advancement and reception of valuable inventions already made; and they alſo operate againſt the production of ſuch as might be made by ingenious men, if they were not diſcouraged by ſuch impediments. But there is another ſerious obſtacle, which is produced even

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by the ~~high ſtate of organization~~ flourishing condition of ſociety, reſulting from thoſe very improvements. From the ſubdiviſion of labour which naturally takes place where active induſtry and the ſecurity of property are eſtabliſhed, it happens that almoſt every man becomes confined to ſome appropriate occupation; ſeldom regarding, or even knowing what may be the proceſſes or operations to which the material of his trade may be ſubjected before or after it paſſes through his hands: ~~And~~ ſtill leſs does he know what is performed in other branches of trade and manufacture. The acquiſition of wealth almoſt totally engages the attention of individuals thus employed. Hence thoſe vain pretenſions to ſuperior excellence, that ſcorn of improvement, becauſe improvement ſuppoſes previous imperfection, and thoſe earneſt endeavours at ſecrecy and monopoly; in addition to which there is a natural fear of riſque, which deters men from entering upon new undertakings, of which they are not qualified to form a judgment. It cannot, therefore, be wondered, that the generality of manufacturers ſhould poſſeſs neither the knowledge, the inclination, nor the ſpirit to make improvements.

Among the various operators who take their ſtations in the great laboratory of civil ſociety, there are others who cannot be claſſed either with manufacturers or merchants, though they perform a great and very eſſential part of the general work. Theſe men are philoſophers, who have devoted themſelves to the labour of obſerving, comparing, analyſing, inventing. The movements of the univerſe, the relations and habitudes of men and of things, cauſes and effects, motives and conſequences, are the powers on which they meditate for the developement of truth, by thoſe remote analogies which eſcape the vulgar mind. It is the buſineſs of theſe philoſophers to examine are employed in executing any thing that is new. How many uſeful inventions have been brought into diſrepute by ~~what has been pompouſly announced~~ to the public ~~as improvements of them! And the inſtances can ſcarcely be enumerated, in which both manufacturers, and the world at large, have been diſguſted at pretended inventions of no value whatever~~.

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THERE appear to be but three direct methods of diminiſhing or removing theſe difficulties: 1. To give premiums or prizes to the inventors. 2. To grant temporary monopolies. And, 3. To direct the public attention to the arts, by an inſtitution for diffuſing the knowledge and facilitating the general introduction of uſeful mechanical inventions and improvements. The firſt already conſtitutes the object of a moſt reſpectable Society: × the ſecond ~~forms part~~ is within the province of the law of the land; and the third is now offered to the conſideration of the public.

× Society of Arts &c

The two chief purpoſes of THE INSTITUTION being the ſpeedy and general diffuſion of the knowledge of all new and uſeful improvements, in whatever quarter of the world they may originate; and teaching the application of ſcientific diſcoveries to the improvement of arts and manufactures in this country, and to the increaſe of domeſtic comfort and convenience; theſe objects will conſtantly be had in view, not only in the arrangement and execution of the plan, but alſo in the future management of the inſtitution.

In the execution of the plan, the managers have purchaſed, with the approbation of the proprietors, a very ſpacious and commodious houſe in Albemarle-ſtreet, where convenient and airy rooms will be prepared for the reception and public exhibition of all ſuch new mechanical inventions and improvements, as ſhall be thought worthy of the public notice; and, more eſpecially, of all ſuch contrivances as tend to increaſe the conveniences and comforts of life, to promote domeſtic economy, to improve taſte, or to advance uſeful induſtry.

The ~~moſt perfect~~ working models or conſtructions of the full ſize will be provided and exhibited in different parts of this public repoſitory, of all ſuch new mechanical inventions as are applicable to the common purpoſes of life.

completest

Every conſideration unites in ſhewing ~~the infinite importance~~ to the progreſs of real improvements, to have ſome general collection of uſeful mechanical contrivances, conſtructed on the moſt approved principles, and kept conſtantly in actual uſe, to which application could be made as to a ſtandard; in order to determine whether the failure of experiments be owing to errors in principle, or to the miſtakes of workmen employed in the conſtruction, or to thoſe of the ſervants intruſted with the management of the machinery.

how highly important it must be

~~And~~ How uſeful also would ſuch a repoſitory be for furniſhing models, and for giving inſtruction to artificers who may be employed in imitating them! Workmen muſt ſee what they are to imitate—bare deſcription ~~of a thing~~ will not ~~anſwer~~ suffice to give them ~~ſuch preciſe~~ ideas ~~of what is to be done~~ so precise, as to prevent t~~heir falling int~~o much error in the execution of the work.

But this is alſo the caſe with mankind in general, and even with the beſt informed; for, how great is ~~muſt~~ that effort of the imagination ~~be,~~ which is neceſſary to form an adequate idea of what we have not ſeen!—Deſcriptions, though they be illuſtrated by the beſt drawings, can give but very imperfect ideas of things: the impreſſions they leave ~~behind them~~ are faint and tranſitory, and ſeldom excite that degree of ardour which ought to accompany the purſuit of intereſting improvements. Something viſible and tangible is neceſſary to fix the attention and determine the choice.

This tacit recommendation from a reſpectable Public Inſtitution, where things judged worthy of public notice will be expoſed to view, muſt evidently tend to produce the happieſt effects. The manufacturer, as well as the conſumer, will become inſtructed as to the real value of new objects preſented to view. The managers of ſuch an Inſtitution will ~~muſt~~ be above all ſuſpicion of intereſted motives; their ſituation in life places them out of the reach of the mean jealouſy of intereſted competition; and if, contrary to all expectation, the effects of prejudice ſhould, in ſome reſpect or other, be directed againſt their laudable exertions, a firm perſeverance in their duties muſt at length remove that ignorance which alone can give them birth.

An Inſtitution of this nature is peculiarly calculated to produce that unity of purſuit between manufacturers and men of ſcience which is abſolutely neceſſary for ~~the~~ perfection ~~of~~ in the theory as well as the practice of all the arts of civilized life. The Philoſopher will behold and contemplate the prodigious number of truly ſcientific experiments, which are hourly performed in the workſhops of ignorant men; and the Artiſt, by being taught to ſeize the general outline and connexion of the manual operations by which he obtains his bread, may learn to ſimplify his often tedious proceſſes, and give increaſed value to the product of his labours.

attaining

The collection and exhibition of models and machines will be rendered more effectual in its conſequences by detailed accounts or deſcriptions, illuſtrated by correct drawings. Arrangements will be made and correſpondences eſtabliſhed for obtaining the earlieſt and beſt information reſpecting every valuable improvement which may be made either at home or in foreign countries. Viſitations of manufactories, careful examinations of the proceſſes of the arts, regular inveſtigations, with accurate reports and regiſters of thoſe operations and proceedings which may conſtitute the objects of inquiry or information, will, no doubt, afford very intereſting reſults. ~~And~~To this growing maſs of inſtruction, the managers will add a library of all the beſt treatiſes on the ſubjects for which this Inſtitution is eſtabliſhed, as well as thoſe publications of academies and journals of repute which exhibit the tranſactions of ingenious men in every part of the world.

IN order to carry into effect the ſecond object of the Inſtitution, namely, that of *teaching the application of ſcience to the uſeful purpoſes of life*, a lecture room will be fitted up for philoſophical lectures and experiments, and a complete laboratory and philoſophical apparatus, with the neceſſary inſtruments for making chemical and philoſophical experiments. Men of the firſt eminence in ſcience will be engaged to officiate in this eſſential department.

It may appear neceſſary to give ſome ſtatement or enumeration of the ſeveral views to which the attention and the powers of this Inſtitution will be directed. Such an enumeration, if made with only a ſmall degree of the preciſion to which it is entitled, would graſp at once the whole ~~organization~~ of national induſtry. That man muſt labour for his food, and defend himſelf from the inclemencies of the ſeaſons, the ferocity of wild animals, and the ſtill more pernicious operations and influence of vice in his fellow creatures, are the inevitable decrees of Providence! He muſt ~~eat~~;—he muſt be clothed; — houſes, towns, fortreſſes, roads, canals, carriages, ſhips, inſtruments of manufacture, weapons of offence and defence, the ſubdiviſion of labour, commercial intercourſe, and political regulation—all theſe muſt be eſtabliſhed. This rapid aſſociation of words and ideas, every one of which includes a ſcience, for the ~~arrangement~~ of things in the higheſt degree important to man, may ſerve, in the preſent ſhort outline, to lead the mind to ſome of thoſe objects which, ~~in the nature of things~~, muſt conſtitute the purſuits of an Inſtitution eſtabliſhed for purpoſes ſo great and truly dignified.

extent & disposition

be nourished

supply & regulation

of necessity

But though the extent and importance of the various departments from which the Inſtitution may derive the means of diffuſing the knowledge of valuable improvements, and teaching the applications of ſcience to the advancement of manufactures, are too great to admit of any comprehenſive enumeration; and though, from the intimate connection of all the ſeveral ſubjects of art, it is at preſent impoſſible to give an outline of that arrangement into which the communications of the ſeveral Lecturers muſt ultimately diſposed ~~themſelves~~;—it nevertheleſs ſeems

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expedient to ſtate the leading topics; with a view to aſſiſt the meditations of thoſe who may be diſpoſed to enter more minutely into the plan of operations to be adopted by this Inſtitution.

The machines and models will afford a perpetual ſource of inſtruction. The lectures will be more particularly uſeful to elucidate and apply thoſe general principles which are only in part ~~ſeen~~ observable in particular ſtructures. The firſt principles of mechanics will be exhibited and explained in the ſimple engines called the mechanical powers; and to theſe will be referred the prodigious variety of tools, implements, and engines in common uſe, the curioſity and value of which, as well as the improvements they are capable of receiving, are but too frequently overlooked. Under this head will come the practical operations of various arts, and the mutual connection between the theory of mechanics, and the experimental knowledge of the materials; requiſites which do not often accompany each other, though of the ~~firſt~~ utmost neceſſity. Under the diviſion of General Mechanics will be ſhewn the advantages we derive from thoſe happy expedients which abridge the labour of man in the culture of the ground, the preparation of food and clothing, by mills, looms, and other engines, and the improvements still poſſible to be made in the wonderful arts of writing and printing; the effects of which have already carried the intellectual operations of ſociety to a ~~pitch~~ height they could by no other means have attained.

The comprehenſive ſcience of modern chemiſtry will be taught and elucidated in the ſame ſimple and perſpicuous manner. The proceſſes of the laboratory will be employed to diſengage and exhibit thoſe ſubſtances which, with regard to the preſent extent of our knowledge, are conſidered as the elements of other bodies. Their compounds will be ſhewn, and the hiſtory of their connection with the ſtructure of the earth, and their application to uſeful purpoſes, will be explained. This elementary knowledge, ſo deſirable and even indiſpenſable to the intelligent manufacturer, will then be connected with the great operations of the arts and trade. The nature of ſoils, the effects of tillage, of manure, and of the air and water of the atmoſphere, which are eſſential to the product of every article of conſumption, will firſt preſent themſelves as ſubjects of reſearch and elucidation. From the firſt produce, or raw materials, we ſhall be led to the various proceſſes they are made to undergo. The making of bread; the brewing of beer, wine, and other fermented liquors; the diſtillation of ardent ſpirit; the preſervation of animal and vegetable foods; the extraction of ſtarch, farina, ſugar, and other valuable articles; the making of butter and cheeſe, and numerous other arts, afford proper ſubjects for inveſtigation, and are, no doubt, ſuſceptible of very beneficial improvements.

Among the more elaborate arts may be claſſed thoſe of tanning, dyeing, callico printing, bleaching, the fabrication of ~~painters~~ pigments, crayons, inks, varniſhes, and the like; in many of which very rapid advances have lately been tr made.

The mineral products afford materials for arts of the higheſt importance to human ſociety. How much ~~of~~ do our comforts, and how greatly does the extent of our powers in mechanical operations and commercial intercourſe, depend upon the tenacity and hardneſs of ſteel, and its ſingular property of magnetiſm! The ſmelting of metallic ores, the caſting and compounding of metals, the preparation of acids and other uſeful ſalts; the indiſpenſable articles of mortar, cements, bricks, pottery, glaſs, and enamel, will ſhew to what valuable purpoſes the crude minerals have been applied; and will bring to recollection no inconſiderable number of beautiful inventions of our own time and country.

From the vaſt field of individual operations, or ſeparate manufactories, the inquirer will be led to other works of more general conſideration, which include, not only the objects of mechanics and chemiſtry ſtrictly taken, but likewiſe thoſe of commercial operation and political economy. Under this claſs of objects will be found, the ſtructure of roads, and form of vehicles; the eſtabliſhment of canals; the improvement of rivers, harbours, and coaſts; the art of war—its engines, materials, and edifices; and in particular, that firſt object of the civil and military engineer, the eſtimate of natural powers or firſt movers, namely, animal ſtrength, wind, water, ſteam, and other elaſtic and exploſive ſubſtances. The methods of determining the magnitude of theſe forces will be ſhewn, with their application to mills and every other engine. The exhibition of working models will particularly diſplay the powers of hydraulic machines, and that ſtrikingly uſeful apparatus the ſteam-engine.

But, above all, we ſhall find our contemplations urged to the phenomena of light and heat; thoſe great powers which give life and energy to the univerſe!—powers which, by the wonderful proceſs of combuſtion, are placed under the command of human beings, who, without their aſſiſtance, would not only be incapable of operating on the materials around them, but could ſcarcely ſupport their own exiſtence. If we could for a moment ſuppoſe the privation of fire and artificial light, it would follow, as an immediate inference, that the greateſt part of the globe would ceaſe to be the habitation of man. Whether he could enſnare or overtake thoſe animals, upon whoſe unprepared remains he would then be compelled to feed;—whether he might ſtore the fruits of the earth for his winter ſupply;—what might be the phyſical and moral conſequences of a ſtate of ſuch deſolation, may perhaps be conjectured, but no eſtimate can ſhew its dreadful magnitude! But if it ſhould be proved, as in fact it may, that in the applications of fire, the management of heat, the production of light, the ſalutary effects of clothing, the ventilation of our dwellings, the preparation of our food, and in every other art and manufacture;—we do not, even now, derive half the advantage from combuſtion, which might be obtained by a judicious application of the principles already known; it will readily be admitted, that theſe ſubjects muſt conſtitute a very principal part of the inſtructions to be conveyed in the Public Lectures of the Inſtitution.

Then follow the Resolutions
Charter &c &c –
Lists of the Members Officers &

BESIDES the courſes of public lectures it is propoſed to admit pupils into all or any of the departments of reſearch which conſtitute the objects of this eſtabliſhment. The inſtructions to be given to the *pupils of the Inſtitution* will be ſuch as will conſtitute a complete courſe of ſcientific education, theoretical as well as practical, but variable according to the particular deſignation of each reſpective individual. The conciſeneſs of an introductory addreſs forbids any ample examination of the particulars of this moſt uſeful body of inſtruction. The mathematical ſciences, as applied to the ſurveys of particular diſtricts, or the geography of countries and kingdoms; aſtronomy, navigation; the conſtruction and uſe of mathematical and other inſtruments of extended application; the theory, formation, and uſe of engines and machines of all kinds, dynamic, hydraulic, and pneumatic, for naval, military, or civil uſe; the natural hiſtory of the animal, vegetable, and mineral kingdoms; chemiſtry, geology, mining; the proceſſes and numerous improvements of manufactories:—Theſe are a few among the ſubjects which, in the detail and due arrangement, will form a ſyſtem of uſeful education never yet offered to the Public; a ſyſtem calculated to open new ſcenes of rational enjoyment to men of independent fortune, and eminently ſuited to give increaſed value to the treaſures of nature and art which lie neglected around us. Young gentlemen intended for civil and military ſervice either at home or abroad, as well as thoſe who are deſtined to become manufacturers, engineers, or commercial men, will here find thoſe means of inſtruction which have long been ſought in vain in the more limited eſtabliſhments of private life. Who can point out the conſequences when men ſo educated ſhall quit their country for its general ſervice, or for the government and regulation of our immenſe territorial and commercial appendages? The extenſive

This supplementary part has be
abandoned, altho' in the opinion o
many Gentlemen connected with th
East & West Indies especially, it
thought highly useful & would
have experienced great patronage

continent of India, fruitful in every product, the Iſle of Ceylon, the Moluccas, and other Indian iſlands abundant in minerals and other moſt valuable articles, may be conſidered as yet unexplored with regard to the advantages they are capable of affording under the direction of men ſo qualified.

It will not then be neceſſary to ſend out workmen of very inferior qualifications to take charge of eſtabliſhments requiring mechanical or chemical knowledge. Our Weſt Indian colonies offer deſiderata equally valuable: and the rich harveſt of acquiſition in the arts, in trade, in local eſtabliſhments, in the exploring and improving our mines, our agriculture, and every other department of public induſtry at home, has already, in part, begun to ſhew itſelf, and muſt increaſe with a rapidity proportioned to the growth and adoption of the principles of uſeful ſcience.

This very deſirable courſe of education will be no additional expence to the Inſtitution; but, on the contrary, will add to its funds. For many and obvious reaſons it is propoſed that the pupils ſhall pay an adequate ſum for the expences of their inſtruction, which, though much leſs than could afford the ſame advantages by any more confined ſyſtem, will nevertheleſs be more than ſufficient to defray all charges, beſides affording a liberal encouragement to the profeſſors.

A particular Proſpectus of this department will ſhortly be given. In the mean time it may be proper to obſerve, that the moral conduct and regularity of behaviour of the pupils, more eſpecially thoſe reſident in the houſe of the Inſtitution, will be under the particular guidance of the principal profeſſor, ſubject to the inſpection of the managers and viſitors; and that this eſſential particular, as well as their progreſs in the ſciences, muſt, from the local ſituation of the Inſtitution, be almoſt conſtantly under the eye of their parents and friends.